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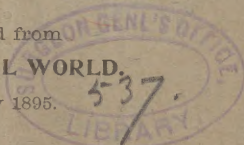
Radical Treatment of Hernia,  
With 100 Tabulated Cases.

—BY—

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## Radical Treatment of Hernia.

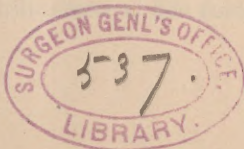
[By JOHN B. DEEVER, M.D., Professor of Surgery Philadelphia Polyclinic; Assistant Professor Surgical Anatomy, University of Pennsylvania; Visiting Surgeon to the German and Philadelphia Hospitals; Consulting Surgeon, St. Agnes', Germantown and St. Timothy's Hospitals.]

Editor MEDICAL WORLD:—I present this paper\* upon the "Radical Treatment of Hernia" with some hesitancy, because of the difficulty I have experienced in following up the cases I have operated upon, and in recording the ultimate results. The total number of radical operations I have done up to date is one hundred, and include MacEwen's, Barker's, McBurney's, Bassini's, Halsted's, and my own modification, which is a combined Barker and MacEwen, and was the one I most frequently performed until the introduction of the Bassini and Halsted operations.

The indications for the radical cure of hernia are, first, hernias which are complete, and in

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[\*This paper was read by invitation before the Surgical Section of the College of Physicians, Philadelphia.]



which the external abdominal ring is so large as to make it difficult, if not impossible, to apply a truss that will hold the rupture ; second, irreducible hernias, this being a form in which it is difficult to obtain a truss to fit accurately enough to prevent the escape of a new portion of the gut, and, third, strangulated hernias, in which the bowel is not gangrenous, or if deeply injected, when it responds to the application of moist heat sufficiently to permit of its being returned.

The Bassini and Halsted methods have given such satisfactory results, with so small a mortality, that I believe that simple reducible hernia should be included among the indications. Granted that a hernia so treated showed a tendency to relapse after either of these operative procedures, the adjustment of a light fitting truss will eliminate all possibilities of subsequent strangulation. I have recently operated for obstruction of the bowels in a patient who was the subject of a reducible hernia ; the obstruction was due to a band formed by the omentum, which had become rolled upon itself and had

become adherent to the sac of the hernia just beyond the internal abdominal ring. The fact that such a state of affairs can arise seems to me to offer itself as an indication in considering the advisability of this operation in simple reducible hernias.

It is hardly necessary to state here that patients, the subjects of chronic coughs, and those who have large, flat and flabby belly walls, especially in advanced age, are unfavorable cases. When the hernia is very old and large, the abdominal cavity must necessarily have contracted more or less in accommodating itself to the absence of the viscera which occupy the hernial sac; therefore it is questionable if, under these circumstances, it would be wise to perform a radical cure at all. In cases of this character the patient should be kept in bed for some days with the hernia reduced and retained before the operation is even attempted.

The contra-indications to operations in general are applicable to the radical cure of hernia, except, of course, in the case of strangulation, where the operation becomes a life saving measure.



The choice of operation must necessarily depend upon the individual case. The Bassini, with or without the Halsted modification, is applicable in the great majority of uncomplicated hernias, and to all cases of simple reducible hernia. When strangulation has occurred it may be necessary to treat the wound after the method of McBurney.

All, however, agree that the mortality is small. Of course, when we say a cure we must modify the statement as to time for a relapse. The chief etiological factors in the production of hernia are a weakened abdominal wall and an elongated mesentery, either congenital or acquired; and so, while we can remove and cure a rupture, we cannot altogether remove these anatomical weaknesses, although in a large percentage we can and do add largely to the strength of the abdominal walls.

Too much importance cannot be laid upon the after-treatment of the case, especially during the first six months. While in bed the ordinary dressing of the wound is quite sufficient. After the patient is up and about, a light-fitting truss

should be worn constantly for a long period of time, so as to permit contraction, and fibrous changes in the scar to become solid. Abdominal massage and electricity are of use as strengtheners of the abdominal walls.

We are all so familiar with the modern methods for the radical cure of hernia, that I will not attempt to go into a detailed account of their individual merits, but will give the results of my experience in favor of those which I believe have best fulfilled the indications in obtaining a cure.

The strongest objection to the MacEwen operation is, that the sac is not opened. By this it seems to me we take a great deal for granted in not inspecting the contents to determine the presence of adhesions. These, while they may not enter as a factor in the reduction of the rupture, may at some future time play an important role in an acute mechanical intestinal obstruction. The same objection can be urged against the Ball and Kocher operation. Another objection to these operations is, that there is an attempt made to close the old canal.

The objection to the McBurney operation is, that the permanency of the cure is dependent upon the presence of a large amount of scar tissue. It is a well-established fact that abdominal wounds that heal by primary union are less liable to be followed by hernia than those which heal by granulation.

Bassini's and Halsted's operations are so logical, and based upon such firm anatomical and physiological grounds, and have given such satisfactory results, that they have practically supplanted all other methods of operation.

Between the Bassini and the Halsted operation, I give the decided preference to the latter. I agree with Halsted, that it is not always advisable to bring the cord out at the internal abdominal ring; but that this should be determined by the condition of the muscles at this locality. By exercising the superfluous veins of the cord, the latter is reduced in size, and consequently its opening of exit is correspondingly smaller, thus offering greater resistance to the entering wedge of a subsequent hernia.

Another feature of the Halsted operation is



the position which the cord holds when the operation is completed. The fact that the cord overlies the aponeurosis of the external oblique, makes the new canal more circuitous, and therefore less liable to be followed by a relapse than in the Bassini operation, where the cord lies below the aponeurosis. This further simplifies the operation by doing away with a second row of sutures.

In the operation for the radical cure of hernia, several points present themselves which are well worth discussion, namely :

1. The propriety of enucleating the entire sac of an old and large scrotal hernia. This question must be decided according to the condition of the sac itself, and the answer must depend largely on the surgeon's judgment. If the sac be tightly adherent to the tunica vaginalis and the lower portion of the cord, necessitating a prolonged dissection, particularly if the patient be advanced in years, I think it is better judgment to content ourselves with the removal of that portion of the sac which occupies the inguinal canal. The presence of the remaining por-

tion of the sac does not interfere with the reparative process following the operation. I have seen gangrene of the testicle follow the determined efforts of the surgeon to free the fundus of such a sac.

2. When a mass of irreducible omentum is encountered, it is best to ligate it and cut it away, including only a small portion in each ligature. Care must be exercised in tying the ligatures when the vessels are atheromatous. Under the latter condition it is better to use heavy ligatures, preferably catgut, as the larger ligatures are less liable to cut through the thin-walled vessels.

A condition I have met with a few times, and to which Dr. William T. Bull has called attention, is that of inflammation of the stump of the omentum, with localized peritonitis. One of these cases went on to suppuration and opened spontaneously above Poupart's ligament. While the risk of ligating and cutting away a portion of the omentum is slight, still it is not justifiable to expose our patient to this additional risk, and therefore when reducible it should be returned.

A chronic irreducible omental hernia may undergo a variety of changes, viz.: calcareous, cystic or fibrous degeneration. Where the fatty element of the omentum becomes absorbed, and the peritoneal surfaces crowded together, adhesion takes place, and the omentum is thus converted into a fibrous cord. Again, the peritoneal surfaces may adhere, and the serous fluid accumulating in the cavity thus formed, convert it into a cyst. Where the quantity of fluid contained is small, and the hernia has been of long duration, these cysts at times resemble intestine or testicle.

It is not very uncommon to meet with the vermiform appendix within and adherent to the sac. As it does not complicate the operation, it should be removed. Although it is true that the spleen, the kidney, the ovary and the Fallopian tube, a Meckel's diverticulum, and the epiploic appendages, and even a dermoid cyst, have been found in the sac of an inguinal hernia, I have never met with any of these except an epiploic appendix. Certain loose bodies, generally derived from the epiploic appendices,

are also met with. An elongated and thickened epiploic appendix may be mistaken for the vermiform appendix.

In one of the cases of inguinal hernia which I operated upon for radical cure, there was a prolapse of the extra-peritoneal portion of the bladder, which I had the misfortune to open. In an acquired hernia of the inguinal variety it is not uncommon to meet with an undescended testicle occupying the lower part of the canal. This is a serious complication in the radical cure, as in the vast majority of cases it necessitates the removal of the organ. If the testicle, however, can be drawn down into the scrotum, it should be made to occupy its normal position.

The operation for the radical cure in congenital inguinal hernia differs from that of the acquired variety, from the fact that the tunica vaginalis most commonly constitutes the sac of the hernia, the contents of which are in contact with the testicle. The method of treating the sac in this variety consists in dissecting out the tunica vaginalis entire with the testicle, or treat-

ing it after the manner of MacEwen. The latter procedure is preferable, as it saves the testicle and permits the cord and the inguinal canal being treated after the methods of either Halsted or Bassini. When the testicle is removed with the tunica vaginalis, it is simply necessary to close the canal. As we are not able to recognize this condition before operation, unless the testicle is diseased or very small, thus offering a potent reason for its removal, I should hesitate to do so without the patient's consent.

The encysted variety of congenital hernia is very rare, although I have met with it. The procedure to be carried out is to separate the hernial sac from the tunica vaginalis, which is patulous up to the internal ring, and lies in front of the hernial sac proper, and then tie it off. The radical cure is completed by treating the tunica vaginalis as in the former or ordinary variety of congenital hernia.

The difficulty in retaining a femoral hernia by mechanical appliances makes the radical cure particularly applicable to this variety. The contents of the sac are seldom entirely reduced, thus permitting strong adhesions to form.



There is very little difference in the methods for the radical treatment of femoral hernia. I usually perform a modification of Barker's operation, as follows :

After the sac has been exposed and opened, and the contents reduced, the neck is tied off high up in the canal with a long silk ligature. The ends of the ligature are allowed to remain long. One end is threaded in the eye of a long handled curved needle, which is passed up beneath Poupart's ligament and brought out through the aponeurosis of the external oblique on a line with the upper border of the ligament. The needle is withdrawn, and the other end of the ligature threaded and brought out one quarter of an inch to the inner side of the first. These are now drawn tight and tied down upon the aponeurosis, thus anchoring the stump of the sac in the orifice of the internal femoral ring. The operation is completed as described by Barker, namely :

"A long-handled needle threaded with silk is passed through the posterior layer of the femoral sheath and pubic portion of the fascia

latta, at a point about an inch below Poupart's ligament, and a little internal to the femoral vein, which is protected by the index finger ; it is then thrust upwards nearly as far as the peritoneal ridge, and is then made to emerge across the crural opening, and pass through the lower border of Poupart's ligament. The thread is now withdrawn from the eye of the needle, and the latter is removed and threaded afresh, and made to traverse the same structure in a similar manner, about a quarter of an inch internal to the first stitch. This is repeated until a sufficient number of threads have been introduced to draw the structures together and completely close the femoral canal. The stitches are tied and the skin wound closed."

The operation for the radical treatment of umbilical hernia consists in making two elliptical incisions, carried down to the aponeurosis of the external oblique. The sac is freed from the margin of the hernial opening. The sac is now opened and its contents reduced, enlarging the hernial opening if necessary. The redundant portion of the sac and the overlying skin and

subcutaneous tissues, included between the elliptical incisions, is cut away. The margin of the hernial opening is freshened. The edges of the wound are approximated with two rows of sutures; the deep set of kangaroo tendons, including the aponeurosis and peritoneum, and the superficial of silk-worm gut including the skin and subcutaneous tissues.

Among the number of operations I have performed for the radical treatment of hernia, my record shows one hundred cases, divided up as follows :

Acquired inguinal, . . .	49
Congenital inguinal, . . .	8
Strangulated inguinal, . . .	18
Femoral, . . . . .	7
Strangulated femoral, . . .	11
Umbilical, . . . . .	2
Strangulated umbilical, . . .	3
Ventral, . . . . .	2
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Total, . . . . .	100

Of this number there were eight deaths, two

following the radical treatment, and six for the operation for the radical treatment was performed, where strangulation existed. The deaths occurring in the strangulated cases were five inguinal and one umbilical.

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